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10/622,806	07/18/2003	Hsuan-Wen Wang	P17399 (INT-035)	3474

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EXAMINER

PARK, ILWOO

ART UNIT PAPER NUMBER

2182

DATE MAILED: 07/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/622,806	Applicant(s) WANG ET AL.	
	Examiner Ilwoo Park	Art Unit 2182	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1, 14-23, and 32-35 are amended and claims 37-44 are added in response to the last office action. Claims 1-44 are presented for examination.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-6, 8-10, 13-15, 18-28, 31, 35-39, and 41-44 are rejected under 35 U.S.C. 102(e) as being anticipated by Brandis et al. [US 6,654,343 B1].

As for claim 1, Brandis et al teach a flow control hub, comprising:

a scoreboard memory device to maintain [e.g., col. 8, line 67-col. 9, line 4; col. 6, lines 21-35] flow control status for a plurality of flows, wherein each of the flows is identified [col. 9, lines 4-7; col. 10, lines 22-26] by an associated index in the scoreboard memory;

an address decoder to receive a flow control message from a destination desiring to modify [col. 4, line 67-col. 5, line 3; col. 9, lines 4-11] flow of data thereto, and to determine [col. 10, lines 22-26] an associated flow and scoreboard memory index for the flow control message; and

an updater to update [col. 6, lines 35-38] the flow control status for the associated flow in said scoreboard memory device based on the received flow control message.

4. As for claim 2, Brandis et al teach the plurality of flows maybe based on at least some subset of source, destination, protocol, priority, class of service and quality of service [fig. 2].

5. As for claim 3, Brandis et al teach the flow control message is received in response to capacity of a queue [col. 5, lines 17-20].

6. As for claim 4, Brandis et al teach the flow control message is received in response to changing priorities [col. 9, lines 8-11].

7. As for claim 5, Brandis et al teach said updater includes a comparator to compare the received flow control message with the flow control status maintained in said scoreboard memory device and said updater updates the flow control status maintained in said scoreboard memory device based on the comparison [col. 6, lines 41-52].

8. As for claim 6, Brandis et al teach said updater updates the flow control status maintained in said scoreboard memory device to reflect status identified in the received flow control message if the comparator determines the associated index has either no status, no valid status or a different status than the received flow control message [col. 6, lines 41-52].

9. As for claim 7, Brandis et al teach said updater makes no changes to the control flow status maintained in said memory device if the comparator determines the

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associated index has the same flow control status as the received flow control message [inherent to col. 7, lines 39-41].

10. As for claim 8, Brandis et al teach said updater discards the received flow control message [col. 7, lines 13-14].

11. As for claim 9, Brandis et al teach a message generator to generate a flow control message for a particular flow based on the flow control status maintained in said scoreboard memory device for the particular flow [col. 9, lines 8-11].

12. As for claim 10, Brandis et al teach a selector to select the particular flow [col. 6, lines 21-25].

13. As for claim 13, Brandis et al teach said address decoder utilizes a mapping table to determine the associated index [col. 6, lines 33-37].

14. As for claim 14, Brandis et al teach a flow control hub, comprising:

a scoreboard memory device to maintain [e.g., col. 8, line 67-col. 9, line 4] flow control status for a plurality of flows, wherein each of the flows is identified [col. 9, lines 4-7; col. 10, lines 22-26] by an associated index in the scoreboard memory;

a selector to select [col. 8, lines 64-65] a next flow having a flow control status to process [e.g., col. 5, lines 14-20]; and

a message generator to generate [col. 9, lines 8-11] a flow control message for the selected flow based on the flow control status maintained in said scoreboard memory device for the selected flow.

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15. As for claim 15, Brandis et al teach said message generator transmits the generated flow control message to a queue associated with the selected flow [col. 6, lines 21-37].

16. As for claim 18, Brandis et al teach an address decoder to receive a flow control message from a destination desiring to modify [col. 4, line 67-col. 5, line 3; col. 9, lines 4-11] flow of data thereto, and to determine [col. 10, lines 22-26] an associated flow and scoreboard memory index for the flow control message; and an updater to update [col. 6, lines 35-38] the flow control status for the associated flow in said scoreboard memory device based on the received flow control message.

17. As for claim 19, Brandis et al teach a method, comprising:

maintaining [e.g., col. 8, line 67-col. 9, line 4] a flow control status for a plurality of flows in a memory device, wherein each of the flows is identified [col. 9, lines 4-7; col. 10, lines 22-26] by an associated index in the memory device;

selecting [col. 8, lines 64-65] a next flow having a flow control status to process [e.g., col. 5, lines 14-20]; and

generating [col. 9, lines 8-11] a flow control message for the selected flow based on the flow control status maintained in the memory device for the selected flow.

18. As for claim 20, Brandis et al teach transmitting the generated flow control message to a queue associated with the selected flow [col. 6, lines 21-37].

19. As for claim 22, Brandis et al teach receiving a flow control message from a destination desiring to modify [col. 4, line 67-col. 5, line 3; col. 9, lines 4-11] flow of data thereto, determining [col. 10, lines 22-26] an associated flow and memory device index

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for the flow control message; and updating [col. 6, lines 35-38] the flow control status for the associated flow in said scoreboard memory device based on the received flow control message.

20. As for claim 23, Brandis et al teach a method, comprising:

maintaining [e.g., col. 8, line 67-col. 9, line 4; col. 6, lines 21-35] a flow control status for a plurality of flows in a memory device, wherein each of the flows is identified [col. 9, lines 4-7; col. 10, lines 22-26] by an associated index in the memory device;

receiving a flow control message from a destination desiring to modify [col. 4, line 67-col. 5, line 3; col. 9, lines 4-11] flow of data thereto;

determining [col. 10, lines 22-26] an associated flow and memory device index for the flow control message; and

updating [col. 6, lines 35-38] the flow control status for the associated flow in said scoreboard memory device based on the received flow control message.

21. As for claim 24, Brandis et al teach said updating includes comparing the received flow control message with the flow control status maintained in said memory device and updating the flow control status maintained in said scoreboard memory device based on the comparing [col. 6, lines 41-52].

22. As for claim 25, Brandis et al teach said updating including updating the flow control status maintained in said scoreboard memory device to reflect status identified in the received flow control message if the comparing determines the associated index has either no status, no valid status or a different status than the received flow control message [col. 6, lines 41-52].

23. As for claim 26, Brandis et al teach said updating includes making no changes to the control flow status maintained in the memory device if the comparing determines the associated index has the same flow control status as the received flow control message [inherent to col. 7, lines 39-41].

24. As for claim 27, Brandis et al teach discarding the received flow control message [col. 7, lines 13-14].

25. As for claim 28, Brandis et al teach generating a flow control message for a particular flow based on the flow control status maintained in the memory device for the particular flow [col. 9, lines 8-11] and selecting the particular flow [col. 6, lines 21-25].

26. As for claim 31, Brandis et al teach utilizing a mapping table to determine the associated index [col. 6, lines 33-37].

27. As for claim 35, Brandis et al teach a device comprising:

a plurality of ingress ports to receive data from external sources and to store the data in a plurality of ingress queues [see fig. 3] associated with a plurality of flows, wherein the ingress queues are associated with flows, wherein the flows are associated with at least some subset of source, destination, and priority [e.g., col. 3, line 66-col. 4, line 8];

a plurality of egress ports to receive data from at least a subset of the plurality of ingress queues and to store the data in a plurality of egress queues [see fig. 4] prior to transmission, and wherein the egress ports issue flow control messages to control flow of data to the egress ports based at least in part on capacity [col. 5, lines 17-20] of the egress queues; and

a flow control hub to receive flow control messages from the egress ports [col. 9, lines 4-11], to record [e.g., col. 6, lines 33-38] a flow control status for an associated flow in a scoreboard memory based on the received flow control message, to discard [col. 7, lines 8-14; col. 7, lines 34-35] the received flow control message subsequent to recording the flow control status, to select [col. 8, lines 64-65] next flow having a valid flow control status to process [e.g., col. 5, lines 14-20], to generate a flow control message for the next flow, and to forward [col. 9, lines 8-11] flow control message to ingress ports associated with the next flow.

28. As for claim 36, Brandis et al teach said flow control hub includes a comparator to compare the received flow control message with the flow control status maintained in said scoreboard memory device and updates the flow control status maintained in said scoreboard memory device based at least in part on the comparison [col. 6, lines 41-52].

29. As for claim 37, Brandis et al teach a flow control hub comprising:

a memory device to maintain [e.g., col. 8, line 67-col. 9, line 4; col. 6, lines 21-35] flow control status for a plurality of flows, wherein a flow defines at least a path from a particular ingress port to a particular egress port and wherein a flow control status for a particular flow defines whether the data is eligible for transmission [col. 5, line 65- col. 6, line 2; col. 6, lines 41-54] for the particular flow; and

a queuing device to receive flow control messages from at least one egress port, to update [e.g., col. 6, lines 16-40] the flow control status in the memory device for associated flow, and to discard [col. 7, lines 8-14] the flow control messages, wherein

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the flow control message may modify [col. 4, line 67-col. 5, line 3; col. 6, lines 41-54] the transmission eligibility of data to the egress port for one or more flows.

30. As for claim 38, Brandis et al teach a dequeuing device to select [col. 8, lines 64-65] a next flow having a flow control status to be processed [e.g., col. 5, lines 14-20], to generate [col. 9, lines 8-11] a flow control message based on the next flow control status, and to forward the generated flow control message to associated ingress ports.

31. As for claim 39, Brandis et al teach the memory device maintains whether the flow control status is valid for the plurality of flows [e.g., col. 8, line 67-col. 9, line 4; col. 6, lines 21-35].

32. As for claim 41, Brandis et al teach a method comprising:

maintaining [e.g., col. 8, line 67-col. 9, line 4; col. 6, lines 21-35] a flow control status for a plurality of flows in a memory device, wherein a flow defines at least a path from a particular ingress port to a particular egress port and wherein a flow control status for a particular flow defines whether the data is eligible for transmission [col. 5, line 65- col. 6, line 2; col. 6, lines 41-54] for the particular flow;

receiving a flow control messages from at least one egress port, wherein the flow control message may modify [col. 4, line 67-col. 5, line 3; col. 6, lines 41-54] the transmission eligibility of data to the egress port for one or more flows;

updating [col. 6, lines 35-38] the flow control status in the memory device for associated flows based on the received flow control messages; and

discarding [col. 7, lines 8-14; col. 7, lines 34-35] the flow control messages after the memory is updated.

33. As for claim 42, Brandis et al teach validating a particular flow subsequent to the particular flow being updated [col. 6, lines 54-56].

34. As for claim 43, Brandis et al teach selecting a next flow having a flow control status to be processed; generating a flow control message based on the next flow control status; and forwarding the generated flow control message to associated ingress ports [col. 8, line 61-col. 9, line 11].

35. As for claim 44, Brandis et al teach invalidating a particular flow subsequent to the particular flow having a flow control message generated and forwarded [col. 6, lines 41-44].

Claim Rejections - 35 USC § 103

36. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

37. Claims 11, 12, 29, 30, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brandis et al. [US 6,654,343 B1] in view of Lakshmanamurthy et al. [US 2004/0004961 A1].

As for claims 11, 12, 29, 30, and 40, Brandis et al do not explicitly teach the flow control message is a broadcast and updating the flow control status for all flows associated with the broadcast message. Lakshmanamurthy et al teach a flow control message is a broadcast and updating the flow control status for all flows associated with the broadcast message [link level flow control data in paragraphs 0031, 0039]. Thus, it

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would have been obvious to one of ordinary skill in the art at the time of the invention to motivate to combine the cited disclosures in order to increase convenience providing one flow control message capable of affecting a plurality of associated flows rather than affecting each associated flow.

38. Claims 16, 17, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brandis et al. [US 6,654,343 B1].

As for claim 16, 17, and 21, Brandis et al do not expressly disclose invalidating or erasing the flow control status in said scoreboard memory device subsequent to transmitting the generated flow control message. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to invalidate or erase the flow control status in said scoreboard memory device subsequent to transmitting the generated flow control message because the flow control status once used is no longer used and it requires more memory infinitely to keep all the flow control status once used.

39. Claims 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brandis et al. [US 6,654,343 B1] in view of well known in the art.

As for claim 32, Brandis et al teach a store and forward device comprising:

a plurality of ingress ports to receive data from external sources and transmit the data based on flow of the data, wherein each ingress port has a plurality of ingress queues [see fig. 3] associated with a plurality of flows, and wherein transmission of data

from a particular queue is controlled at least in part by a control status associated with the queue; and

a plurality of egress ports to receive data from at least a subset of the plurality of flows, wherein each egress port has an egress queue [see fig. 4] for holding a data prior to transmission, and wherein each egress queue issues flow control messages based at least in part on capacity [col. 5, lines 17-20] of the egress queue; and

a flow control hub to receive flow control messages from the egress ports [col. 9, lines 4-11], maintain [e.g., col. 6, lines 33-38] a flow control status for each flow based on the received flow control messages, select [col. 8, lines 64-65] a next flow having a flow control status to process [e.g., col. 5, lines 14-20], and generate and forward [col. 9, lines 8-11] flow control message to queue associated with the selected flow.

However, Brandis et al do not explicitly disclose a plurality of Ethernet cards including those ingress/egress ports and the flow control hub are connected in a backplane. It is well know in the art that a plurality of Ethernet cards including those ingress/egress ports and the flow control hub are connected in a backplane. At the time of the invention, one of ordinary skill in the art would have been obvious to motivate to combine the cited disclosures in order to obtain a feasibility of packaging and connecting of those ports and hub in the device.

40. As for claim 33, Brandis et al teach each of flow is identified by an associated index in the memory device [col. 9, lines 4-7; col. 10, lines 22-26].

41. As for claim 34, Brandis et al teach an address decoder to receive a flow control message from the egress queues and to determine [col. 10, lines 22-26] an associated

flow and memory device index; an updater to update [col. 6, lines 35-38] the flow control status for the associated flow in the memory device based on the received flow control message; a selector to select [col. 8, lines 64-65] a next flow having a flow control status to process [e.g., col. 5, lines 14-20]; and a message generator to generate [col. 9, lines 8-11] a flow control message for the selected flow based on the flow control status maintained in the memory device for the selected flow; and transmit the generated flow control message to an ingress port associated with the selected flow.

Response to Arguments

42. Applicant's arguments with respect to claims 1-44 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

43. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

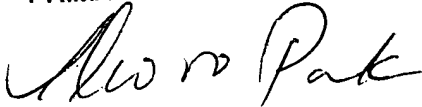
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ilwoo Park whose telephone number is (571) 272-4155.

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The examiner can normally be reached on Monday through Friday from 9:00 AM to 5:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Huynh can be reached on (571) 272-4147. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ILWOO PARK
PRIMARY EXAMINER



Ilwoo Park

July 25, 2006